8 Things you MUST know before building a PC!

By Robert Blackstone

Welcome to the wonderful world of computer hardware! I certainly hope you're ready for a fun and exciting journey. So how experienced do you think you are with computers? Maybe you have updated some software on your computer, possibly installed an operating system, or even formatted a hard drive. But have you ever replaced a stick of RAM, added a second hard drive, or even swapped out a motherboard? (And to those of you that have taken your computer to a store to have this performed, that doesn't count!)

My guess is that if you're reading this e-book, then you haven't had much work with computer hardware. But if you are familiar with computer hardware, there are still tips and techniques I discuss below that you may not have know! Regardless of your level of experience, I hope you're able to gain something from reading this e-book.

I've written this e-book because I hope to teach you how to properly plan the building of a computer. Undeniably, computers will play an even more important role in our futures. Today, it is critical that you can learn how to build your own computer. You'll be able to save time, money, and headaches by being your own technician.

Working with computer hardware is very different than playing with software, though. Much like clay, hardware is something that is touched and molded with the hands, while software is purely information.

Personally, I believe that building a computer is more enjoyable than writing a software program. It's something that I can see with my eyes, and it's either done correctly or incorrectly, while software has gray areas on what's good and bad.

In addition, I want to congratulate you for taking the effort to learn a new trait and skill set. I believe our society would rather pay someone to do a job rather than take the time and learn to do it ourselves. I can understand that time may be a premium, or the task is insurmountable, but people can be flat out …. entirely ….. undeniably ….. LAZY!!!.

Now that I've stepped off my soapbox, let me tell you what you're going to learn. Computer hardware is not complicated or difficult; you **CAN** learn to build a computer. But as you must crawl before you can walk, you must learn about building computer before you actually put one together. In addition, you'll be able to save money because you'll be able to diagnose problems yourself and perform any hardware upgrades.

Take your time through this book. After you've finished reading my guide I can guarantee you'll have more questions. Then I recommend that you check out my

website's tutorials here on how to build your own computer. Don't expect to absorb the material immediately, but read it again and again. Although it may seem challenging at first, stick with it and I can **promise** you that you'll know more about computer hardware after studying this guide.

And finally, let me say thanks for downloading this e-book! Knowing that I'm able to pass my knowledge on to someone else is what makes the publishing process worthwhile.

To building your first computer,
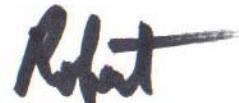
Tip #1 – Safety First

I hope you didn't think the last time you'd hear "safety first" was in your Drivers Education classes! Working on any electronics, including computers, has its risks and requires certain precautions.

Having said that, what's the first part you should purchase when building your own computer?

Motherboard?

Processor?

Computer Case?

Nope, those are all wrong. And honestly, they aren't even close.

A computer tool kit should be the first thing you purchase. Normal household tools aren't suited to working on a computer because they're often dirty, rusty, and magnetic. Here are some things you must have in your computer tool kit:

Antistatic wrist band – This is a must-have for any computer builder. Your computer's components are very sensitive to static electricity. Make sure that you ALWAYS have your antistatic wrist band on when working on your computer. You must attach it to a ground source, usually a large piece of metal works well. This removes any free electrons, which cause static charge, from your body to the ground. Also, as an additional measure, before touching any hardware, touch your computers metal frame. This will also help put your body's charge at equilibrium with your PC's.

Needle-nose pliers and Tweezers - These tools are useful when handling small screws and bits of metal. Your computer's circuitry is very precise and you'll need some good tweezers and pliers to hold things into place.

Screwdrivers – This is an obvious requirement for computer tool kits. You should have at least one small Phillips and Flathead screwdriver in your kit.

Spare parts container - You'll be surprised how handy one of these will be. They can be used to store small parts, screws, spacers, etc.

Nut drivers - Although these aren't a requirement for your tool kit, most tool kits come with some nut drivers. I have yet to use mine, but someday I'll probably need them.

Small flash light - Most computer tool kits don't come with a small flashlight, but it is a good thing to have when you're working in a dark computer case. A keychain type flashlight works great for this purpose!

Also, make sure all of your tools are **NOT** magnetic. Many screwdrivers for small screws are magnetic to help hold the screw in place. You don't want this when dealing with your computer hardware because the magnetic field could damage your components.

I can't stress this enough; having the correct tools is the easiest way to avoid damaging your components that could easily cost you hundreds of dollars. And please turn off and **UNPLUG** your computer before working on it, the last thing you need is a phobia of computers after you've been inadvertently shocked by one.

Related resources for this tip:

Purchase a computer tool kit

Tip #2 - Buy everything at once

This is was a major mistake that I made as a rookie computer builder. I know how anxious you may be to build your first computer; I can still remember how excited I was when UPS delivered my first part.

But before you start buying parts left & right, you should set down and answer the following questions:

-What do I want to do with my computer?
        Simple internet browsing? Word processing?
        Graphic design?
        Audio and video editing?
        Play video games?

-How long do I want this computer to last me?
        -Only for a couple years
        - Forever!

The idea here is to decide where your money will be best spent to maximize the use and/or life of your computer parts. For long term and/or intensive use, such as video/image editing, you'll want something that you can easily upgrade over time. While for short term and/or simpler tasks, a cheaper, less upgradeable PC should work fine.

The easiest way to assure that all of your computer components will be compatible is to purchase them all at the same time. This way you can compare the features and requirements all at once.

I recommend that you start with your motherboard and processor. Many companies sell [motherboard & processor bundles](#). A bundle is great way to start buying your computer parts because usually you'll get a deal when you buy the processor and motherboard together. In addition, the processor will be compatible in that particular motherboard, which is one less thing you'll have to worry about.
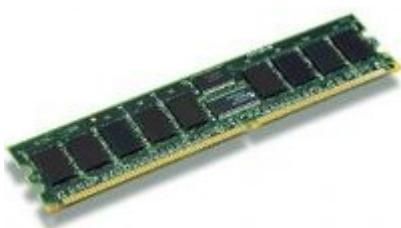
Next, select the type of [RAM](#) that is compatible with your motherboard and decide how many MB's of power you want with it. Generally 512 MB of RAM will be sufficient. If you plan on doing image/video editing, or playing video games on your PC, 1 GB of RAM would be better suited for this job.

Now you can decide what types of extra components you want, such as a video card, hard drives, CD/DVD drives, etc.

Once you've picked those out, determine roughly how much wattage of power you'll need from your power supply. I've attached a power usage chart below with how much each component uses, but these are only averages, so I can't guarantee this is what you'll observe.

Device	Power required (Watts)
Video card	20 - 30
PCI card	5
Floppy Drive	5
CD, DVD-ROM	10-25
RAM per 128 MB	8
Hard Drive	15-35
Motherboard	20-30
CPU	25-70

Generally 400 watts should be plenty of power, even for the most power hungry systems you can build. Also consider purchasing a quiet power supply, because the power supply is generally your noisiest piece of hardware. I personally use a 400 Watt Zalman Quiet Power Supply (pictured at left) that I love. It provides tons of power with virtually no sound.

By purchasing everything at once you can ascertain that your computer parts will support all of your computing needs. Another benefit is that you'll save money on shipping charges by purchasing everything at once rather than separately.

Learn more about:
    Motherboards
    Processors
    RAM memory
    Power Supplies

How to install a:
    Motherboard
    Processor
    Stick of RAM
    Power Supply

Tip #3 - Do's and Don'ts of On-board components

Another way to save a ton of money is to purchase a motherboard that has on-board components. An on-board component is a feature that your motherboard has built "on-board." Do you see all of the plugs in the back of your computer, such as the speaker output, video output, etc? Those are where the on-board components can be found. This concept is a double-edged sword because although they are convenient, they often become the first outdated part of your PC.

The main types of on-board motherboard components include audio, video, Ethernet, USB, and Firewire.

If you're looking for the most economical computer, for use with simple tasks such as word processing, then on-board audio, video, and USB 2.0 should be fine. Firewire is another form of file transfer that will probably not be needed by most users. It is faster than USB, but I've never had a situation when USB was not sufficient.

Here are some more details about the various on-board elements and when they are appropriate for you:

Video – Unless you're on a very tight budget, you should get a motherboard WITHOUT on-board video. The technology in this arena is rapidly changing and you'll find that your on-board video will quickly become outdated and inefficient. A separate video card is ideal for people who want to play video games & watch movies on their PC.

Audio – Only audiophiles can tell the difference between the sound quality of a separate sound card vs. on-board audio. The only time I feel a separate sound card is needed is if you'll be hooking up a digital surround sound system to your computer

USB 2.0 – This is a must have for any computer! If possible, opt for USB 2.0 over USB 1.1 because version 2.0 is about 40 times faster. USB is becoming increasingly important with the use of plug & play devices such as digital cameras, scanners, printers, etc.

Firewire – This is not needed by most users, as it is an alternate form of data transfer. It's similar to USB, except much faster and efficient. Unless you know you'll need this, I wouldn't pay extra for it.

Another note is many motherboards with on-board video / audio come with an APG (video) slot or additional PCI cards slots. So if your on-board hardware becomes obsolete, you can always add on to your current system. The only downfall of this method is you must sacrifice some PCI card slots that you had plans for other uses.

Learn more about:	How to install a:
Motherboards	Motherboard

Tip #4 – Avoid Operating System incompatibilities –

This is one thing I didn't know about before building my first computer, but I wish I had!

Here's the scenario: You have an older computer that you've been using for a while and one day you decide that it's time for some upgrades. Maybe you've received your tax return check, a bonus at work, etc.

You realize that if you want a powerful PC you'll need to replace that old Pentium II processor with something more modern and with room to grow. The easiest and cheapest way to do this is to purchase a motherboard & processor bundle because this ascertains that your processor is compatible with your motherboard.

Finally, what seems like a month of waiting (but was really only 3 days) you receive your parts in the mail. As you rip open the package, you feel like a child on Christmas! Later that weekend you swap out your motherboard and processor with your new ones!

Everything seems to be installed correctly, so you power-up your machine and the Windows operating system starts to load. But then something unexpected happens. The screen doesn't change at all. It looks like it's frozen, but the status bar is still moving or maybe you receive the "blue screen" of death.

This is the EXACT problem I ran into when I built my first computer. After researching this topic I discovered that the hardware changes of adding a new motherboard and processor are so overwhelming that the old operating system may not work with the new hardware. The old operating system was "trained" to work under a different hardware environment, so it doesn't know what you do when you've changed the "brain" of your computer.

This issue does not occur every time you make a major hardware change to your computer, but it is a possibility. The solution to this problem is to start fresh with a new hard drive. You can then eventually add your old hard drive as a secondary hard drive and recover your data.

There are ways to update the Window software once you've installed a new motherboard. This is done through your installation CD and is a pain! I **HIGHLY** recommend that you start fresh when building a new computer, including a new hard drive.

Tip #5 - Consider noise and dirt -

While you're reading this can you hear the buzzing of a bee's nest over in your computer? Better yet, when's the last time you cleaned out those dust bunnies that have made your PC their new home? For the longest time I had a noisy computer with tons of the dirt and dust on the inside. My computer was so loud it distracted me while studying and woke me up while I was sleeping! I really love my computer, but there is a problem when it starts distracting you from accomplishing other tasks. Especially sleeping! And did you know that the accumulating dust in your PC could be overheating the components and ruining them?

Today, I'm putting together a comprehensive e-book that teaches you how to build a quiet and dust-free computer. The e-book will focus on the causes of computer noise, dust, and how to affectively deal with them. If you use the wrong methods to keep your PC cool & clean, you could cause even more problems and overheating.

The noisiest component on your computer is most likely your power supply, and most of the dust that makes its way into your computer can be easily avoided with a few simple changes to your computer.

My point is, don't forget to consider the noise your computer may produce as you add more and more high performance parts. In addition, dust traps heat close to your computer parts, limiting their useable life, so try to think of ways to prevent dust and dirt from ruining your PC.

If you're interested to learn more about building a quiet and clean computer, subscribe to my newsletter and I'll notify you when the e-book is released (it may have already been!)

Tip # 6 - Set aside twice as much time as you think you'll need

Building your first computer is not hard, but it's not a process meant to be rushed. I like to think of building a computer as riding a bicycle. It takes time and practice to learn, but once you have, most people wouldn't consider it "hard" to ride a bike.

Once you learn the tips and shortcuts of building your first PC, it is actually quite easy, but there is a learning curve involved. So if you think it will take you a day to build your computer, give yourself two days instead. Chances are there is something you'll forget your first time around.

Also leave yourself access to another computer, specifically the internet, while building your PC. This way it is simple to ask questions, look up info, or even order parts.

And take your time! Don't try to rush the process, that's the easiest way to damage a part. If something is not fitting properly don't force it into place! Take a breather and analyze what you might be doing wrong. Possibly do some research and then attempt to install the part correctly. Applying to much force to a silicone circuit board can break it or create stress fractures. Although the stress fractures may not be visible, they can affect the flow of current in the board and prevent it from working properly.

If all else fails, it wouldn't hurt to ask someone for help that knows more about computer hardware than you. It will certainly save you the headache of ordering a new part after you've broken one!

Related resource for this tip:

Learn how to build your own computer

Tip #7 - It's addictive!

Did I fail to mention it's addictive to build your own computer? Well, it is! When I put together my first PC I spent way more than I should have because I bought things simply for the "WOW" factor, whether I would get any use out of them or not.

When you first start building a computer set yourself a budget, somewhere between $750 to $1500 is a good range. Any less and you'll be selling yourself short, but anymore and you could have bought a pre-built PC for less money.

In addition, you can go above this and set yourself a monthly or annual computer budget. Personally, I limit myself to one mod a month so that I don't go on a shopping spree spending more than I should.

Also, don't be taken by the claims that you "need" the latest "wiz-bang" computer part. Whenever a product is first developed, the price is generally outrageous and the product has a ton of bugs. Generally if you wait a half-year, the products kinks will be ironed out and the price will have drastically dropped.

Related resource for this tip:

Learn how to choose computer parts

Tip # 8 - Plan for the future

Finally, build your computer with plans for upgrading it in the future. You may save a buck or two by purchasing the most obsolete version today, but you'll end up spending **MORE** in the long run in terms of both money and headaches.

What I mean is don't purchase the most expensive models, but don't buy the oldest version either. A *"middle of the road"* product will generally be the best decision that will leave you satisfied for the longest.

Nothing is more frustrating than finding out some of your computer parts are incompatible with your new set up, and you could have **AVOIDED** the problems by simply spending a little bit more money in the past.

Here are some of my thoughts on evolving computer hardware and what you should do **NOW** to get the most down the road:

64-bit processors – While prices of these have gone down slightly, they are still much more expensive than their 32-bit counterparts. Currently, only AMD Athlon has a 64-bit processor on the market. Another thing to note is you won't notice any large gains in your computers performance because most current computer operating systems (including Windows XP) and software packages are built to only utilize 32-bit processors. So in a sense, they can't "unlock" the extra power provided by 64-bit CPU's. My advice is to give the software manufacturers more time to utilize these hardware advancements, at least until Microsoft produces a version of Windows that can utilize 64-bit processing power. Read this page for more information on 64-bit vs. 32-bit processors.

RAM (memory) - SIMM and SDRAM are all but outdated, so avoid these like the plague! DDR ram is the currently the most common type of RAM being shipped in new computers, but RD (Rambus) RAM is gaining popularity and steam. Although RD Ram must be installed in pairs, it is currently offering the best performance. If you are planning on purchasing a new motherboard in the near future, highly consider purchasing one that uses RD RAM because when 64-bit processors become mainstream, RD RAM will be required and that will be one less thing you'll have to worry about purchasing.

DVD Drives – While writeable CD drives are very popular today, writeable DVD drives are on the rise. A DVD can store up to 4.7 GB of data, while a CD can only store about 700 MB, or only about 15% of a DVD's capacity. Burnable DVD's are excellent for performing computer backups, and storing digital family videos & pictures. So next time you purchase a DVD drive for your computer, don't forget to get a writeable one instead, the benefits far out weight the costs. Read this page for more info on DVD drives and formats.

Well that about wraps things up! I hope I was able to present a general introduction to computer hardware for you. The easiest way to learn about computer hardware is to jump right in. Try to find an old, junk PC no one else is using and attempt to tear it down and put it back together.

If you're interested in learning even more about computer hardware I **HIGHLY** recommend that you subscribe to my newsletter. I'll be sure to keep you informed of the latest trends and deals in computer hardware. Also, any time new articles are posted on my site you'll be sure to know right away!

Perhaps you'd like to suggest another tip for this e-book (possibly Tip #9!) then I'd love to hear from you. Or if you have any general feedback of this e-book, be sure to contact me at my site.

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Once again, thanks for reading and be sure to check out my site Build Your Own Computer Tips

All the best,
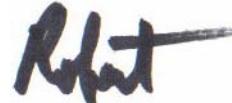
P.S.

On an extra side note here, I must give **respect** where it is due.

I publish and maintain my website, newsletter, and e-books using a service called Site Build It. It is not only a web hosting solution, but a web business solution. I've been publishing content on the internet for years, and this is the easiest program to use for beginners and veterans alike.

Seriously folks, I've never used an easier way to maintain and build a website.

If you're serious about making your own website, Site Build It costs me less than $40 a month after their instant rebates (no waiting for a check in the mail). In addition, the amount I make monthly from my site far exceeds its cost.

I love to talk about Site Build It, so if you have any questions about it, be sure to contact me at my site and I'd be happy to answer them for you.

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